Panaji, 4th May, 1972 (Vaisakha 14, 1894) SERIES I No. 5

OFFICIAL GAZETTE

GOVERNMENT OF GOA, DAMAN AND DIU

GOVERNMENT OF GOA, DAMAN AND DIU

Finance (Expenditure) Department

Memorandum

3-114/70/Fin(Exp.)

The Government of India, Ministry of Home Affairs, New Delhi in their letter No. 1/1/72-GP dated 13th April, 1972 have equated 'Absorbed posts' in the Public Works Department under Rule 3 of the Goa, Daman and Diu (Absorbed Employees Conditions of Service) Rules, 1965 as indicated below.

Sr. No.	Pre-liberation posts		Pay Rs.	Equation with post carrying Central scale of pay	
	Designation of post			Designation	Scale of pay
1.	Dactilografa Assalariada		250/-	Lower Division Clerk	110-3-131-4-155-EB-4-175-5-180

M. Kalyansundaram, Under Secretary (Finance).

Panaji, 25th April, 1972.

Industries and Power Department

Notification

2-93-71-IPD

Government is hereby pleased to make rules for Departmental examinations for Engineering Officers/Officials of the Electricity Department of this Administration.

This will come into force with immediate effect.

I) A departmental examination shall be conducted for Engineering Offices of the rank of Assistant Engineers and Junior Engineers/Sectional Officers. The number of papers the marks for each paper and the subject in which the examination shall be conducted and detailed syllabus for each paper is given in Annexure I. These being the same as are applicable to this corresponding cadres in C. W. P. & C. & C. P. W. D. any changes made by them will automatically be applicable to the Engineering Officers of the Electricity Department of Government of Goa, Daman and Diu.

II) All the Engineering Officers of the rank of Assistant Engineers and Junior Engineers/Sectional Officers will be required to pass the Departmental examination within 4 years of appointment/promotion to the posts provided that no Officer avails of more than 4 chances.

III) All engineering officers of the rank of Assistant Engineers and Junior Engineers/Sectional Officers who are in service on the date of issue of these rules will also be required to pass the departmental examination within 4 years of the date of their issue.

IV) The Engineering Officers of the rank of Executive Engineers who are already promoted from the lower cadre shall also have to pass the Departmental Examination prescribed for the Assistant Engineers within 4 years from the date of issue of these rules provided that not more than 4 chances are availed of by them.

V) If the first examination is held within 6 months of his joining service, it will not be taken into account and the limit of 4 chances will be extended suitably in order to enable the Officer to take Examination held next.

VI) In exceptional cases owing to exigencies of public service or due to other circumstances beyond his control if an Officer is unable to appear in or pass the departmental Examination within the prescribed period, the Government may grant extension for such period as may be deemed necessary.

VII) The following categories of Officers will not be required to pass the Departmental Examination.

(a) Those who are either 45 years of age or have put in 10 years of service in the date of issue of these rules.

(b) Retired Officers re-employed in the Electricity Department of Goa, Daman and Diu.

(c) Officers who are on deputation from the C.W.P.C. or State Electricity Boards to the Government of Goa, Daman and Diu holding the posts of Assistant Engineers/Junior Engineers/Sectional Officers.

VIII) (a) No Officer who fails to pass the Departmental Examination shall be considered for promotion to the grade of Executive Engineer/Assistant Engineer in the Electricity Department of Government of Goa, Daman and Diu.

(b) Assistant Engineer and Junior Engineers/ /Sectional Officers who are in service in the Electricity Department of Government of Goa, Daman and Diu on the date of issue of these rules may be considered for promotion to the posts of Executive Engineers and Asst. Engineers during the period of 4 years from the date of issue of these rules or during the period of extension for appearing at the Departmental Examination if allowed to them under Rule VI above. Officers who are thus promoted will however be required to pass the Departmental Examination within the prescribed period which then will include the period of extension granted under Rule VI. If an Officer so promoted fails to pass this Departmental Examination within this period, the increments accruing to him will be withheld. An Officer who fails to pass the Departmental Examination shall also not be considered for further promotion.

(c) Passing the Departmental Examination will not be for any claim for promotion. It is only a qualifying test and not a test for seniority. Seniority shall not be disturbed in case an Officer passes the test earlier or in the same test gets a higher position than his seniors.

IX) An officer who wishes to appear in the Examination shall submit an application through proper channel in the form given in Annexure II for onward transmission to the C. W. & P. C./C. P. W. D. as the case may be. The Chief Electrical Engineer will forward the application to the C. W. & P. & C./ /C. P. W. D. by a specified date.

X) The Government may amend, cancel or add to any of these provisions from time to time.

By order and in the name of the Administrator of Goa, Daman and Diu.

P. Noronha, Under Secretary.

Panaji, 27th March, 1972.

Legal aspects of electric power supply tariff under the Indian Electricity Act, 1910 and the Electricity (Supply) Act, 1948

3. **Code of safety practices as applied to Electrical Generation, Transmission and Distribution.**

(i) *General:* Administration of safety programme, employees knowledge codes, personal conduct, responsibilities of the supervisory staff and workmen, training of employees, sanitation and house-keeping, safety of public and visitors, accidents-reporting, investigation and analysis.

(ii) *Protective Equipment and Tools:* Protective clothing and rubber gloves, gauntlets, geloshes, hoods and mats and blankets, linemen's belts, goggles and eye-shields, operating rods, hand-lines and canvas buckets, breathing apparatus, tools, protective temporary barriers, safe supports, earthing devices.

(iii) *Handling and storage of material and equipment:* Material and equipment storage, manual handling, mechanical handling carrying piling etc. Handling and storage of poles, chemicals and explosives.

(iv) *Transportation:* General precautions, operation and maintenance of automatic equipment, tower wagons, vehicle booms ladders and lifts, transportations of personnel and procedure in traffic accidents.

(v) *Workshops and Garages*: General precautions, grinding wheels, tools, welding burning and cutting and painting of equipment. Oil tests and purifications.

(vi) *Fire protection and fire fighting:* Fire fighting services, training, inspection and appliances, Fire escapes and precautions for prevention of fires.

(vii) *First Aid and resuscitation:* First Aid services — maintenance of First Aid in case of accidents, rendering of artificial respiration.

(viii) *Earthing:* General precautions, permanent earths and temporary earths.

(ix) *Clearance procedure:* Request for clearance, procedure regarding permit to work, sanction for test, station guarantee, self protection tag danger notice. Procedure under emergency conditions.

(x) *Electrical equipment including receiving stations, sub-stations and switching stations*: Guarding of live apparatus, general provisions for maintenance and operation, working in areas containing exposed live H.V. and E.H.V. conductors, work on remotely controlled equipment automatically controlled, equipment and equipment operated by compressed air, work on cables, metal cladswitchgear, instrument transformers, generators, transformers, oil circuit breakers, rotary convertors, rectifiers, lighting arresters, storage batteries, high voltage fuses capacitors etc.

(xi) *Hydro electric stations:* Guarding of hydraulic works and mechanical equipment and their operation and maintenance, maintenance of scroll cases, draft tubes, thrash rocks, flumes and forebay and penstocks.

(xii) *Steam stations:* General provisions — operation and maintenance, guarding of mechanical equipment, work on steam turbines, boilers, pressure-vessels and associated pipe work, stoker pulverised fuel, gas and oil fired furnaces and andiallary equipment. Coal coke and ash handling plant, access to bunkers and similar situations. Storage of coal.

(xiii) *Diesel stations:* General provisions — operation and maintenance, guarding of mechanical equipment and its operations, storage and handling of petroleum and fuel oils, etc. General cases of engine troubles.

(xiv) *Overhead lines:* Operations, inspection and testing of lines work on over head lines, single or multiple circuit, work on pole mounted sub-stations, painting and other work on towers, washing of live insulators, testing of insulators on live lines. Work on clearing and obstruction causing delay or inconvenience to important services work on telephone lines and carrier equipment.

(xv) *Hot-line technique*: Hot line tools, general rules and precautions safety rules for supervisors and linemen instruments on pole climbing.

(xvi) *Forestry work:* General precautions, tools and equipment tree falling lowering several branches from trees, working near live lines.

4. **Electrical Instruments:** Measuring instruments, classification, indicating, integrating and recording instruments, ammeters and volt-meters, extension of instrumental range, measurement of power, energy, speed, frequency and phase-different strain meters, electrical thermometers electrical measurement of pressure accuracy classes, application.

5. **Hydraulics & Hydraulic Machines:**

Hydraulics

(i) *Fluid Mechanics:* Physical fluid properties, fluid statics, energy and momentum relations applied to compressible and incompressible fluids, one and two dimensional flow of an ideal fluid, steady and unsteady flow of fluid in closed conduits, effect of viscosity on fluid motion, surface and form resistance, separation and cavitation, lift and drag surface tension.

(ii) *Open channel flow:* Theory of uniform and varied flow in open channels, with practical application to the design of hydraulic structures, computations of draw-down curves, back-water curves, hydraulic jump, measuring flumes, submerged wires.

(iii) *Mechanics of similitude and dimentional analysis*: Theory of the use of models in design conditions for similarity in the case of hydraulic structures, elastic structures, aircraft, ships waves etc.

(iv) *Hydraulic turbines and pumps:* Elementary theory of hydraulic pumps and turbines of the impulse, radial flow, axial flow and mixed types.

(v) *Hydraulic measurements:* Laboratory and field methods and instruments for measurement of hydraulic pressure, velocity and discharge.

Hydraulic Machines

Principles of turbine action, types of turbines, their characteristics and their applications. Dynamic similarity, specific speed, runaway speed, hydraulic thrust, model tests, cavitation, water conductor system, penstocks. Governing of turbines, testing, pressure regulators.

6. **Prime Movers:** Types of prime-movers-steam engines, gas turbines, internal combustion engines, their application, operation and maintenance.

7. **Construction Planning and Labour:**

(i) *Planning:* (i) Study of Toposheets — Factors governing the selection of Dam Sites — Choice of type of Dams; (ii) Water studies — Determination of height of the Dam and (iii) Flood control, Irrigation and Power Aspects — Study of Geological Investigations.

(ii) *Layout:* Layout studies with particular reference to the location of spill way, power house and other auxiliary works. Determination of the length of spillway, size and the number of gates. Criteria for fixing the F. R. L. and M. W. L. and Free Board, Energy Dissipation Arrangements. High Head Power Plants requiring long water conduction system consisting of Power Channels, Pressure Tunnels, Surge Tanks and Penstocks — Location of Intake, alignment of water conductor system and adits for tunnels.

8. **Code of safety practices with special reference to workshops and factories and use of mechanical equipment:**

(i) *Safety Organisation & Planning*: Economic aspects, purpose of safety prevention responsibility of management in prevention of accidents, safety crew, safety programmes activities, functions of safety Directors, safety department and safety committees, basic steps in planning for accident prevention, analysis of accident records, plant inspection, warning tags (Red) attached to the equipment.

(ii) *Maintaining interests in safety:* Keeping the safety programme active, coordination between the various departments, classes for instructions on safety practices, monthly meetings with the executives of the different departments, exhibition of safety rules.

(iii) *Engineering factors in safety:* Safety guards for conveyer, belts, ropes and chains, use of Engineering Standards, safety devices for rotating equipment hydraulic equipment, material equipment, materials handling equipment, overhead travelling cranes barricks, towers trucks and tractors excavation equipment, pumps and compressors drilling and blasting arc and gas welding and cutting, safety inspections, schedule of inspection.

(iv) *Study and analysis of accidents:* Classification of Accidents (Construction and Workshop) Definition of Accident terms, Accident investigation, purpose of investigations, proceedings of the investigation, analysing the causes of accident, accident analysis charts, publication of monthly charges of reports of accident programme for accident prevention. Workmen's compensation insurance and indirect costing accidents.

(v) *Fire prevention:* Fire and panic, first aid fire protection, fire patrols, water supply and distribution, mobile and installed fire fighting facilities, fire alarm devices, fire fighting organisation, training and drilling, evacuation facilities.

Professional Papers No. II & III

1. **Design and Layout of thermal (Steam Diesel and Gas): Generation:**

(i) Study of factors determining the type, size and description of equipment selection of live steam, exhaust steam and feed water parameters.

(ii) Factors determining the choice of location of power plant.

(iii) Factors determining the choice of energy cycle.

(iv) Selection of major equipment to fit the cycle steam parameters and fuel decided upon.

(v) Preliminary layout-determining factors, making detailed specifications for major items of equipment.

(vi) Final layout-making detailed specifications for minor items of equipment.

2. **Preventive maintenance of electrical and mechanical machinery:**

The role of maintenance schedules, records, log books, history sheets for individuals machines/equipment specimens of these inventories of spares, tools and special tools, trained personnel, Insulation-solid, oil compound etc. (Purification & Testing) Lubrication and bearings, ventilation and cooling electrical system-commutators, brushes, starters, contractors, earth resistance, protective relays and instruments.

Mounting and foundations, vibrations and alignment corrosion. (L. C. Codes of practice may be followed).

3. **Designs and Layout of hydro-electric plants (Generation):**

1. Estimates of power potential of hydro electric plants for fun of river and storage schemes, duration curves, mass curves, coordination with other uses.

2. Hydraulic system of hydro electric power stations — consideration in use of channels, tunnels etc. effect on operation. Requirements of forebays, surge tanks. Elements of water hammer studies, design of surge tanks, design of penstocks, stability of governor, tail races.

3. Siting of hydro power stations, orientation of switchyard and transformer yards. Overground and underground power stations.

4. Selection of turbines-appropriate ratings, turbine setting and dimensions, horizontal and vertical units. Power house dimensions. Use of characteristic surves and homologous equations. Cavitation phenomena. Aeration, Bearings, Auxiliaries, Governors and Governor arrangements.

5. Hydro-electric generations — charasteristics required construction, cooling, excitation and Voltage control. Bearings, auxiliaries temperature detection, temperature rises grounding.

6. Electrical Layout — Auxiliary power supply. Instrumentation/protection. Alarms and safety devices, problems of switchyard design associated with hydro power stations.

7. Power station auxiliary systems — Grounding; cooling water fire protection, dewatering, Compressing air, oil handling, illumination. Draft tube depression, cranes and hoists. Functions of computations.

8. Details of power station layout and designs— Floor arrangement and equipment arrangement, piping. Cooling galleries. Auxiliary spaces required in power station.

9. Testing of turbines and generators in factory and at site.

10. Specifications of equipment. National and international standards.

4. Electrical and mechanical design of transmission lines and distribution systems:

Lime performance calculations using nominal I and II methods. AECD circuit contents, circle diagrams and their use in solving power system problems, static capacitors, system stability, power limits of transmission lines, application of series capacitors, use of auto-close breakers, lighting protection of over-head lines. Line insulation, bundle conductors, sag tension calculations, design of supporting structures and foundations. Specifications of equipment. National and International Standards.

5. Design and layout of electric power sub-station:

(i) Design of substations — Layout and arrangement of plant-choice of indoor and outdoor working structures.

(ii) Bus-bars-designs, type of bus-bars-single bus bar, duplicate bus bars, transfer bus bar, combined reserved and transfer bus bar, Mesh bar, arrangement of bus bars with reactors.

(iii) Calculations of 3 phase fault currents and voltages symmetrical components basic theory calculation of instantaneous symmetrical short circuit KVA at section bus bars expremental determination of short circuit KVA determination of a symmetrical short circuit currents.

(iv) Limitation of fault currents effects of short circuits on systems effects of circuit breaker failure artificial reactance-type of reactors feeder reactors bus bar reactors.

(v) Theory of arc initiation and interruption-principle of arc extinction recovery voltage, restriking voltage-oscillograms of short circuits-interruption of capacitive currents arc control devices types of circuit breakers-circuit breaker operating mechanism single break and multi-break circuit breakers compressed air operation high rupturing capacity fuses rating of circuit breakers air blast circuit breaker voltage oscillations resistance switching--compressed air equipment auto-reclose circuit breakers-isolating equipment inter-lock operations.

(vi) Tranformers — Construction-types-transformer connections-Losses and efficiency — Parallel operation of transformers, grounding of transformers— transformers potection-off-load and onload tap changers-testing and commissioning — Maintenance of transformers — transformer oil — treating and purification oil testing equipment — Transformer cooling and auxiliares.

(vii) Measurement of currents and voltages — Instrument and protective transformers-types and construction connections — measurement to positive, negative and zero sequence quantities, protection of electrical circuits. Relays Types and construction protective systems for bus bars and substation equipments application of relays relay characteristic switch boards instruments — Summation metering.

(viii) Surge protecting—lighting arrestors theory construction and application — Coordination of insultation-basic insulation level.

(ix) Substation grounding: grounding of structures and substation equipment auxiliary supply-batteries design, requirements, size of battery and charging equipment battery maintenance substation fire fighting equipment and fire preventation safety arrangements for substation operation and maintenance.

(x) Specification of equipment — National and International standards.

6. Evaluation of tenders for electrical equipment:

(Portion confined to Electrical and Mechanical Equipment).

Consideration in the purchase of equipments general features of technical suitability, evaluation of relative merits of alternative equipment, non-technical consideration such as delivery period, terms of payment, currency etc. evaluation of total costs, relative extent of civil works and other additional costs, capitalisation of technical performance, problems of maintenance, availability of spare parts, extent of dismantling required etc. effect of commercial conditions.

7. Modern construction methods for transmission and distribution:

Survey of transmission lines routes, preparation of sage templates and their application for locating structures, excavation and sub-setting. Methods of erection of towers and poles, sag and tension charts, preservative treatment of wood poles, painting viz. galvanising of steel transmission towers.

8. Laws governing electric supply industry in India:

(The Electricity Supply Act, 1948).

Matters relating to the constitution of Central Electricity Authority, State Electricity Boards and their general duties preparation of schemes, publication and sanctioning of schemes, the grid tariff, licences to comply with Board directions, licences charges by consumers rating committees, general principles of Board's finance, depreciation reserve, arbitration directions by State Government, powers, to make rules and regulations, financial principles and their applications and prescribed period of assets.

Electric power supply tariff:

General laws of supply and demand-their special features in respect of electricity supply and demand -maximum demand-consumption-load factors-power factor diversity factor-effect of these on electricity supply tariffs.

Types of consumers-domestic, commercial, industrial small medium and large, agricultural, water works, public lighting railway traction, etc. their load characteristics reasons for classification of consumers for tariff purposes.

Types of tariffs flat rate energy tariffs bulk tariff--all in-tariff two part tariff-off peak tariff-tariff for seasonal loads secondary supply tariff special tariff for very large power consumers-incremental costs power factor and its importance in tariff penalty clauses in tariff.

Legal aspects of electric power supply under the Indian Electricity Act, 1910, and the Electricity (Supply) Act, 1948.

Detailed knowledge of the sixth schedule to the Electricity (Supply) Act 1948-Determination of costs of power supply undertaking-fixed charges interest, depreciation, proportion of management and general establishment charges, rent and taxes, running charges operation and maintenance repairs and renewal charges etc. General matters affecting the cost of power supply such as types and size of power supply, extent of transmission and distribution lines, types of loads served etc.

Basic principles of pricing of electricity supply cost of service principle-value of service principle--allocation of cost under various heads, generation, transmission and distribution, methods of formulation of tariffs danger of uneconomic pricing.

Interpretation of tariff schedules and their applicability comparison of different tariffs-average rates for various clauses of consumers — effect of the tariffs on the revenue realises-factors to be considered for revision of tariffs towards more revenue.

9. Modern construction methods for generating Stations:

States of construction, preparation of construction and delivery schedules, cranes, hoits and other erection equipment embedded parts. Galleries working unloading and storage areas, construction, auxiliaries such as electric power compressed air, water supply, etc. under-ground stations, — Transport.

10. Project estimating-power projects:

Feasibility studies, Engineering and Economic.

(a) Estimates of power demands, load surveys, and load forecasting procedure-load curves-load factor, plant of factor diversity factor.

(b) Investigations regarding location of power station and auxiliary works.

(c) Schedule of rates for works relating to power station civil and electrical works, transmission and distribution work and allied power development works.

(d) Tariff rates and tariff structures.

(e) Provisions of the Indian Electricity Act and the Rules thereunder in relation to the processing of projects.

Project Reports

Types of project reports:

History of Project.

Salient features.

Assessment of relative merits of a number of alternatives sites for schemes, difficulties anticipated and remedies.

— Description and scope of works.

Optimum generation of Power and utilisation of the Power Resources in relation to present and future demands.

Selection of the size and type of plant and equipment stages of power development.

The Scheme as related to existing or proposed Grid-Integrated operation, Network Analyser Studies.

Direct and indirect benefits.

Estimates of costs and analysis of rates.

Construction programme.

Allocation of costs between the different purposes based on utilisation of benefits for each purpose.

Financial returns and benefits.

Projects estimates.

Types of estimates, Parts of an estimate.

Division of the Project into units-Major Heads of a Unit-Minor Heads, detailed Heads.

Preparation of estimates of costs for hydro electric and multipurpose Projects, Thermal Power Projects, Transmission and distribution and Rural Electrification works.

11. Electrical Instrumentation:

Turbine, generator and transformer instrumentation, indicating control and safety devices, pressure gauges, oil level indicators, flow indicators, temperature indicators and records. Gate limit and opening, speed droop and level indicators audible and visible annunciaters.

Instrumentation control and safety devices for boilers coal handling equipment material handling system.

Instrument transformers, protective relaying current, voltage frequency differential, earth fault, distance, impedance and other relays, their types and applications in respect of generations, transformers, bus bar and transmission lines, recent trends in relaying statics relays, transistorised relays.

Metering, measuring, integrating and recording meters, teleme-tering, supervisory control and indications for automatic operation of power stations.

Automatic voltage regulator circuits, regulations, magnetic and rotating applicances, types, linedrop and in phase compensation parallel, operation of A. V. Rs.

Electrical Governors and components used, the characteristics of electric governor, advances and disadvantages and their application.

Accounts paper:

(i) Practical questions to test the knowledge in respect of writing up estimates, Muster Rolls, Measurement Books, Cash book, Register of works and other works accounts.

(ii) (a) Fundamental Rules — Chapters V and XI.

(b) Supplementary Rules: 17-81. 89-91, 105-107, 109. 114-116(c), 123-135, 142, 143, 146-147, 154-158, 161-162, 180-186A, 195 and 293-302 and 318-335.

(iii) C. P. W. D. Agreements and their implications.

Syllabus for Departmental test for Sectional Officers in Simple Accounts:

(i) Maintenance of imprest accounts.

(ii) Maintenance of T&P Accounts and Stock Accounts; i. e. materials obtained for general requirements of the department.

(iii) Maintenance of materials of sub-accounts; i. e. material cost of which is charged at specific works.

(iv) Maintenance of muster rolls and labour employed departmentally.

(v) Recording of measurements including preparation of contractors running and financial bills.

(vi) Procedure for execution of works and preparation of works Abstracts.

ANNEXURE I

Information for the candidates for the Departmental Engineering Examination of the Electricity Department, Govt. of Goa, Daman and Diu

The Examination will consist of the following papers carrying the marks indicated against each: —

(1) Professional paper No. I (Compulsory) (6 Questions of 25 marks each to be answered by each candidate option being given to select questions).	General paper. Marks ... 150 Time: ... 3 hours.
(2) Professional Paper No. II (Special paper with books) (2 Questions of 60 marks each).	Marks ... 120 Time ... 3 hours.
(3) Professional paper No. III (Special paper without books). (5 Questions of 11 marks each).	Marks ... 55 Time: ... 1½ hour.
(4) Accounts Paper (with books).	Marks ... 100 Time ... 3 hours.
(5) Oral test.	Marks ... 75

The papers will be set separately for the Civil, Mechanical and Electrical Engineering candidates. The detailed syllabus under each subject for each of the papers — is furnished below: —

Electrical and Mechanical Engineers (power wing)

1. Professional paper no. 1:

I. Electrical generation and electrical transmission and distribution:

(i) *Electrical Generation:* Sources of energy, heat and mechanical energy, steam and hydel power stations, choice of site, prime movers, arrangement of plant, operating costs, generating machinery, pumped storage hydro-electric schemes, nuclear power generation, integrated operation of power stations, principles of modern methods of power generation. Direct energy conversion. Principal items of plant and equipment in generating stations, their relative costs.

(ii) *Electrical Transmission and Distribution:* Systems of supply A. C. and D.C. Distribution, transmission and distribution standard voltages, Kelvin's law, types of conductors, corona voltage regulation in A. C. systems power factor and power factor improving devices.

2. Electricity Law in the Indian Union and electric power supply tariff:

Electricity law in the Indian Union:

(i) *The Indian Electricity Act, 1910 — Definitions:*

Matters relating to great and revocation of licences, laying of electric supply lines, supply transmission and use of energy by non-licensees, accidents and inquiries, appointment of Electrical Inspector, Central Electricity Board and its functions, criminal offences such as theft or energy and provisions as to laying down of further distributions main and requisition for supply to owners of occupiers in vicinity.

(ii) *Indian Electricity Rules, 1956 — Definitions:* Matters relating to qualifications of Inspectors entry and inspection, application for licence, construction, installation protection, operation and maintenance of electric supply lines and apparatus, handling of electric supply lines and apparatus, instructions for restoration of person suffering from electric shock, precautions to be adopted by consumers owners, electrical contractors, electrical workmen and suppliers, precautions against leakage before connection, supply to consumers, provisions applicable to medium, high or extra high voltage installations declared voltage of supply to consumers, connection with earth or equipment, approval by Inspector, use of energy at high and extra high voltage, voltage thesis, overhead lines, factors of safety, clearance above ground and from buildings, earthing, safety and protective devices, protection against lighting relaxation of rules and penalties for breach of rules.

(iii) *The Electric (Supply) Act, 1948:* Matters relating to the constitution of Central Electricity Authority, State Electricity Boards and their general duties, preparation of schemes, publication and sanctioning of schemes, the grid tariff, licensees to comply with Board's directions, licensees charges to consumers, Rating Committees, general principles of Boards finance, depreciation reserve, arbitration, directions by the State Govts. power to make rules and regulations, financial principles and their applications and prescribed period of assets.

Electric power supply tariff:

General laws of supply and demand — their special feature in respect of electricity supply and demand maximum demand consumption — load factor—power factor—diversity factor—effect of these on electricity supply tariffs. Type of consumers, domestic, commercial, industrial—small, medium and agricultured water works, public lighting railway traction, etc., their load characteristics—reasons for classification of consumers for tariff purposes.

Types of tariffs: Flat rate energy tariffs—bulk tariff—all in tariff—two part tariff—off peak tariff—tariff or seasonal loads—secondary supply tariffs—special tariff for very large power consumers incremental costs power factor and its importance in tariffs—penalty clauses in tariffs.

ANNEXURE II

Application form

(1) Full name of the candidate (in block letters).
(2) Designation.
(3) Age on the 1st day of ... the month in the year in which to be examined.
(4) Name of the office in which employed.
(5) Date of joining the Electricity Department, Govt. of Goa, Daman and Diu.
(6) Date of appointment to the present post.
(7) If confirmed, date of confirmation and their grade in which confirmed.
(8) Present pay and the scale of pay.
(9) Result of the previous examination, if any.
(10) Certified that I have read the rules for Departmental Examination of the Eng. Officers of Electricity Department, Govt. of Goa, Daman and Diu.

Signature of the applicant.

Date ...

Endorsement No. ... Dated ...

Forwarded in original, to the Chairman, Central Water and Power Commission, CPWD, New-Delhi for favour of disposal.

Dated ...

Signature ...

Date ...

For the use in the main office of the CW&PC/CPWD

(1) Date of receipt of the Main Office.
(2) Main Office serial No. of accepted application.
(3) Entered in the register of accepted application by
(4) Intimation of acceptance sent to the candidate through the Head of his office, vide letter No. ... dated the ...
(5) Roll No. allocated ...
(6) Centre at which to be examined ...

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